Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

July 21, 1993

TO: Minerals File

FROM: Tony Gallegos, Reclamation Engineer aag
Holland Shepherd, Senior Reclamation Specialist HLOS

RE: Site Inspection, North Lily Mining Company (NLMC), Tintic Project, M/023/007, Juab County, Utah

Date of Inspection: July 21, 1993
Time of Inspection: 1010 - 1430
Conditions: Cloudy, cool
Participants: Paul Spor, NLMC; Holland Shepherd and Tony Gallegos, DOGM

Purpose of Inspection: To examine areas reclaimed and reseeded by NLMC.

The first area visited was the ENOS Dump. Mr. Spor said this area was reclaimed in September 1992. Vehicle access to this area is restricted by locked gates. The dump area has been regraded and furrowed along the contour. In the process of regrading the dump area NLMC backfilled an old portal at the site. There is some good vegetation growth in the furrows where water would collect. The hay mulch is still evident at the site.

The next site visited was the North Star Dump. The North Star area is visible from the ENOS dump. This area was also reclaimed in September 1992. Vegetation growing on the top of the dump, where the terrain is relatively flat, is sparse. The lack of vegetation is probably due to the very coarse nature of the material, lack of fines and lack of available nutrient material. There is some good vegetation growth on the lower portions of this area, mainly located where the dump material contains fines. This portion of the site would not meet revegetation standards, at this time.

The next area visited was the Mammoth Dumps. The Lower Mammoth Dump was reclaimed during the Fall of 1990. Vehicle access to the Upper and Lower Mammoth areas is restricted by a locked gate.

Vegetation success on the lower portion of what was considered the Lower Mammoth Dump is good. The upper slopes of the Lower Mammoth area have some vegetation, but not as thick as the lower portion. This portion of the site would not meet revegetation standards, at this time.

The Upper Mammoth Dump was reclaimed in 1992. A small portion of the Upper Mammoth area is showing some good vegetation success, while the remainder of the area is having poor success. The vegetation is growing best where there are fines. Little, if any, vegetation was coming up on the coarser material. In general, the areas of coarse material are the piles of reject material (+3/4) after screening the dumps. This portion of the site would not meet revegetation standards, at this time. The large piles of reject at the Lower Mammoth still remain. The road accessing the Upper Mammoth area is still in place. Mammoth Mining Company requested that NLMC not reclaim this road.

After lunch, the Yankee Dump was visited. This dump has been regraded, nicely terraced and seeded. The earth work was done in 1990 and the seeding was done in 1992. The dump material is dark and very coarse. There is very little vegetation growing on the coarse material, but there were a few pockets of fines with some vegetation. This portion of the site would not meet revegetation standards, at this time.

The next area visited was the Mayday Dump. Vehicle access to this area is restricted by a berm and trench. This area was reclaimed in 1990. The coarse reject materials at this dump have been regraded at the bottom of the dump area. Vegetation in the coarse material is very sparse. The small bench in the dump has some vegetation, mostly foxtail barley. This portion of the site would not meet revegetation standards, at this time.

The next area visited was the Eagle Dump. This area was reclaimed in Nov-Dec 1992. The area has been regraded and furrowed along the contour. The earthwork exposed a portion of the bin assembly and headframe at the site. This site showed good vegetation success in areas with fines and poor success in the coarse material. This portion of the site would not meet revegetation standards, at this time.

The next area visited was the Eureka Hill Railroad Grade area. This area is downhill and east of the Eureka Hill area. The vegetation on this site is sparse on the coarse materials and seeded species are growing on areas where fines can be found. This area was reclaimed during the Fall of 1992. This portion of the site would not meet revegetation standards, at this time.

The next area visited was the Centennial dump area. Vehicle access to this area is restricted by a fenced off road and a locked gate. This area was reclaimed in the Fall of 1992. From the fenced off road, it appeared that portions of the dump showed some good revegetation success, while others showed poor success. This is probably due to the availability or lack of fines as a growth medium.

Plants

Please see the attached list of plant species, which were seeded into the sites listed above. Of the plants on this list we did detect: Crested Wheatgrass, Indian Ricegrass, Fourwing Saltbrush, Bitterbrush, Annual Rye, Western Wheatgrass, Alfalfa and Yellow Sweetclover, growing at different locations across these sites. In most abundance was the Annual Rye and Crested Wheatgrass. A shrub, which was not on the list, that we also saw was Rabbitbrush.

In evaluating the plants growing on these reclaimed areas, we noticed that in some of the more adverse areas, the only plants growing were weedy species, which had been brought in with the mulch or had arrived in the wind. I've listed below some of the weedy plant species we saw. These would be very adaptive for difficult to reclaim sites lacking nutrients and water holding capacity (very coarse textured), they are also non-noxious:

1.	Foxtail Barley	(Hordeum jubatum)
2.	Bottlebrush Squirreltail	(Sitanion hystrix)
3.	Blazing Star	(Mentzelia laevicaulis)
4.	Mullein	(Verbascum thapsus)
5.	Prostrate Vervain	(Verbena bracteata)

A problem with seeding these species onto a site, is that some would not be available from seed suppliers, while others are very expensive.

Conclusion

In conclusion, the earthwork performed at all the sites visited is acceptable and exemplary in several cases. Revegetation success on the lower portion of the Lower Mammoth Dump is very good. The other dump areas reseeded have not yet endured a year or two of growth, necessary to make a qualified revegetation evaluation. It appears that the amount or location of waste fines has a strong influence on the vegetation success. The areas containing very coarse materials will take a much longer time to revegetate. Photographs were taken of the various areas inspected.

We discussed the possibilities for bond release, with Mr. Spor. We indicated to Mr. Spor, that the Division would be willing to release that portion of the bond covering the earth work (regrading and backfilling). However, revegetation success could not be determined at this time; and it would take at least three years to make that determination. The most expensive component of reclamation has been accomplished. The earth work generally consists of about 50% of 80% of the bond. Mr. Spor indicated to us that he would be contacting us soon about the bond status.

We explained to Mr. Spor, that certain areas of the site, where coarse textured material was abundant, would probably not support a good stand of vegetation, within the next 10 to 20 years. However, because of regrading, the process of natural invasion of local plants will be enhanced, but occur over a long period of time. We indicated to Mr. Spor, that the Division would not expect North Lily to meet revegetation standards on the coarse textured material.

jb
Attachment
cc: Paul Spor, NLMC
M023007.INS

M/023/007
7/21/93

Date 10/6/92

North Lily Mining Co.

Reclamation Vegetation Requirements

- Basic list of recommended plant species for seeding:

Assessable Areas: @ drilled 20 lbs - broadcast 27 lbs/acre

Plant Species	Common Name	Mixed Seeding Rate lbs/acre
Agropyron cristatum	crested wheatgrass	5
Agropyron smithii	western wheatgrass	4
Oryzopsis hymenoides	indian ricegrass	2
Medicago sativa (ladak)	forbs	4
Atriplex canescens	shrubs - fourwing saltbrush	3
Purshia tridentata	bitterbrush	2

Inassessable Areas: @ broadcast 27 lbs/acre

Plant Species	Common Name	Mixed Seeding Rate lbs/acre
Secale Cereal	annual rye	5
Agropyron elongatum	tall wheatgrass	3
Agropyron smithii	western wheatgrass	4
Medicago sativa (ladak)	alfalfa	4
Melilotus officinalis	yellow sweetclover	3

- Fertilizer - Diammonin Phosphate @ 200 lbs/acre

- Mulch - Straw or weed free alfalfa hay @ 4000 lbs/acre

Reclamation (in feet)

Disturbed 1992	Dump	Sq. Ft			Mix 1	Mix 2	Acres	% Slope
22.8	Eureka Centennial Dump	810'	x	1140'	3.1	28.4	21.2	90
	Eureka Centennial Waste	600'	x	750'			10.3	
7.6	Upper Eureka Hill	240'	x	180'		1.0	1.0	100
	Eureka Hill	870'	x	330'	5.9	.7	6.6	10
12.1	Eagle	1170'	x	450'	12.1		12.1	0
4.7	Eons	114'	x	180'		.5	0.5	100
	North Star Dump	360'	x	129'	.4	.7	1.1	60
	North Star Basin	450'	x	300'	3.1		3.1	0
5.3	Upper Mammoth	510'	x	450'	1.3	4.0	5.3	75
	Yankee	420'	x	255'	.2	2.3	2.5	90
	Total				26.1	37.6	63.7	

Mix 1 - Assessable

Mix 2 - Inassessable